National Institute of Environmental Health Sciences

Potential influence of climate variability on dengue incidence registered in a western pediatric hospital of Venezuela

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Abstract:

Climate change and variability is affecting human health and disease direct or indirectly through many mechanisms. Dengue is one those diseases that is strongly influenced by climate variability. In this study we assess potential associations between macroclimatic variation and dengue cases in a western pediatric hospital of Venezuela in an eight-year period. Between 2001 and 2008, 7,523 cases of dengue were reported in the Hospital Agustin Zubillaga, Barquisimeto, Venezuela. Climatic periods marked a difference of 23.15% in the mean incidence of cases, from El Nino weeks (-14.16% of cases below the mean incidence) to La Nina months (+8.99% of cases above it) (pEuro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)0.0001). Linear regression showed significantly higher dengue incidence with lower values of Oceanic Nino Index (ONI) (El Nino periods) and lower dengue incidence with higher values of ONI (La Nina periods) (pEuro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)0.0002). As has been shown herein, climate variability is an important element influencing the dengue epidemiology in Venezuela. However, it is necessary to extend these studies in this and other countries in the region, because these models can be applied for surveillance as well for prediction of dengue.

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Resource Description

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

El Nino Southern Oscillation, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Tropical

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Central/South America

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Dengue

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Short-Term (

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content